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Examining Anxiety Schemas through the Context of a Stress-Intrapersonal Model

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EXAMINING ANXIETY SCHEMAS THROUGH THE CONTEXT OF A STRESS-INTRAPERSONAL MODEL

by

KAYLA M. LELEUX-LABARGE

(Under the Direction of Jeff Klibert)

ABSTRACT

Explicating vulnerability factors to anxiety difficulties is important as the National Comorbidity Study (NCS) lists anxiety as the most common and costly class of mental health disorders in the United States. Maladaptive schemas, as theorized by Young (1990), perpetuate anxiety pathology by hindering the individual's ability to alter behaviors, thoughts, emotions, and overall approach to adverse events. Previous research indicates that intrapersonal resources can stymie the development of psychopathological features, even in the context of adverse life events (Floyd, Seltzer, Greenberg, & Song, 2013). The main purpose of the current study was to explore the relationship among adverse life events and anxiety schemas, and potential mediating variables, mindfulness and psychological flexibility. Using a two-wave longitudinal design, data were collected from a sample of 183 college students via an online survey. The average age of the participants was 21.4 year ($SD= 2.2$). Results suggest adverse life events directly and indirectly related to anxiety schemas. In terms of the indirect pathways, the relationship between adverse life events and anxiety schemas can be partially explained by psychological flexibility-control. In total the results offer beneficial implications in the prevention and treatment of anxiety features. Importantly, using evidenced-based techniques, such as ACT, designed to alter an individual's relationships with their internal experiences may help to manage anxiety cognitions and promote healthier coping habits.

INDEX WORDS: maladaptive schemas, adverse life events, anxiety, mindfulness, psychological flexibility, college students

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INTRAPERSONAL MODEL

by

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Fulfillment
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CHAPTER 1: INTRODUCTION

Schemas are preconceived and organized thought patterns developed early in life that aid in the formation of an individual's self-concept (Beck, 1976; Young, 1990; Piaget, 2000).

Schema patterns are categorized by behaviors, thoughts, and emotions that are reinforced across the lifespan (Young, 1990). Much like their underlying behavioral, emotional, and cognitive features, schemas can affect the course of one's life in positive and negative ways. Maladaptive schemas, as theorized by Young (1990), arise when traumatic/adverse events impinge upon the development and expansion of basic emotional needs (e.g., autonomy, freedom of expression) in critical periods during childhood and adolescence (Young, Klosko & Weishaar, 2003). Such events have a tendency to alter how individuals perceive themselves and their ability to survive in tumultuous circumstances. Overall, maladaptive schemas are unconscious, dysfunctional cognitive themes triggered by adverse events and experiences that influence the way an individual perceives, catalogues, and reacts to negative events.

The counterintuitive and unconscious nature of maladaptive schemas is especially harmful to an individual's growth and well-being. Paradoxically, maladaptive schemas are developed as a defense against threats to an individual's sense of security and self. McKay, Lev, and Sheen (2012) further highlight the counterintuitive role of maladaptive schemas by noting the effective nature by which these debilitating patterns aid individuals in avoiding, forestalling, and temporarily alleviating emotional turmoil. In fact, individuals who adhere to maladaptive schemas often become heavily dependent upon them to avoid potential stress and conflict (Young et al., 2003). Ultimately however, these cognitive systems stymie the accumulation of resources needed for healthy development into older adolescence and emerging adulthood (Klibert & Lamis, 2012). For instance, consider the impact of maladaptive schemas developed in the context of sexual abuse. Experiences of sexual abuse often contribute to the development of

cognitive patterns associated with mistrust of others (e.g., “others cannot be trusted because ultimately they will take advantage of me”). In response to such thoughts, victims of sexual abuse will often adopt social processes that facilitate a disconnected and strained approach to creating and maintaining interpersonal relationships, in the hopes that such an interpersonal style will reduce further victimization in the future. Unfortunately, this approach has the potential to impinge upon the development of healthy social skills that promote positive and long-lasting peer and romantic relationships.

The idea that maladaptive schemas operate outside of conscious awareness is also problematic. According to Young and colleagues (2003), maladaptive schemas lie dormant and only become observable in the face of adverse or stressful events. Unfortunately, developing insight into a construct that is not observable in everyday life is difficult. This is exacerbated by schema perpetuation, the process by which schema-related thoughts, emotions, and coping strategies are reinforced and maintained over time (Young et al., 2003). Ultimately, the unconscious and self-fulfilling nature of maladaptive schemas restricts perspective taking, hindering the individual’s ability to alter behaviors, thoughts, emotions, and overall approach to adverse events.

In light of their counterintuitive and unconscious nature, maladaptive schemas often contribute to the development and exacerbation of a wide range of psychopathological problems. Young, Klosko, and Weishaar (2003) posit that maladaptive schemas are a key component in the development of personality disorders, milder characterological problems (e.g., perfectionism), and many fluid dystonic conditions, such as anxiety. Although maladaptive schemas have been associated with a wide range of mental health symptoms, the processes by which specific

maladaptive schemas develop are unclear. Moreover, the process by which maladaptive schemas develop into specific symptom profiles (e.g., anxiety disorders) is even less clear.

Theoretically, specific schema clusters have been implicated as vulnerability factors to anxiety and its associated features. Two major themes underlying anxiety schemas are exaggerated threat appraisal and lack of self-control in the face of anxiety-producing events (Barlow, 2002; Calvete, Estevez, Lopez de Arroyabe, & Ruiz, 2005). Exaggerated threat appraisal is characterized by an extreme physiological response and sense of fear to seemingly innocuous or bland circumstances (e.g. an individual catastrophizes about receiving a B on an exam). In addition, people who suffer from anxiety also report fewer perceptions of self-control and more perceptions of hopelessness to augment symptom provocative stimuli. As such, maladaptive schemas that exacerbate cognitive appraisals of threat and deplete perceptions of control are thought to be cognitive vulnerabilities to anxiety disorders (Barlow, 2002). In terms of Young's schema hierarchy, four individual schemas appear to meet specifications for anxiety specific cognitive vulnerabilities: vulnerability to harm schemas, insufficient control schemas, subjugation schemas, and approval seeking schemas. These four schemas are the focus of the current study.

As noted above, adverse life events trigger the development of maladaptive schemas, which in turn reduce an individual's ability to remain emotionally, physiologically, and cognitively stable (Ingram & Luxton, 2005). It is important to note though, that not everyone who experiences adverse events develop vulnerabilities to anxiety. Supporting this position, research indicates that 50% of individuals who experience traumatic events *are not* likely to develop any form of pathology (Monroe & Hadjiyannakis, 2002). This suggests that “a substantial number of people can either successfully navigate through, or at least tolerate, the

burden of stress without significant psychological impairment” (Klibert & Lamis, 2012, p. 139). Overall, some individuals who experience traumatic events appear to be at a greater risk to developing psychopathological features (e.g., anxiety schemas), when compared to others. However, researchers have yet to identify mechanisms that either promote or hinder such risks. As a result, this study seeks to identify variables that mediate the relationship between adverse events and a specific feature of psychopathology, anxiety schemas.

How individuals react to challenging circumstances and develop cognitive processes associated with the self-concept is affected by the presence or non-presence of intrapersonal resources (Barlow, 2002; Klibert & Lamis, 2012). Intrapersonal resources are personalized strengths or perceptions of coping with adverse events that originate within the individual, most times, unknowingly, and defend against the development of pathological features. Previous research indicates that intrapersonal resources can stymie the development of psychopathological features even in the context of adverse life events (Floyd, et al., 2013). In addition, research has shown that one’s perception of adverse events determines the resources available to mediate the stress-pathology relationship (Brenner, Zimmerman, Bauermeister, & Caldwell, 2013).

Considering these findings, it would stand to reason that access to and implementation of intrapersonal resources in the face of adverse life events may forestall maladaptive schema development. However, research has yet to consider the impact of intrapersonal resources on the adverse event-anxiety schema relationship. Two specific intrapersonal resources that may mediate the relationship between adverse events and anxiety schemas are mindfulness and psychological flexibility. These variables were chosen based on clinical evidence that indicates these factors are useful in promoting well-being in individuals with cognitions related to anxiety (Hayes, Stroschal, & Wilson, 2012; McKay et al., 2012).

Purpose

The relationship between adverse life events and maladaptive schemas has been studied, but research on adverse events and their effect on anxiety schemas is limited. Identifying mechanisms that contribute to our understanding of the development and maintenance of anxiety schemas is essential in advancing our knowledge concerning the onset of anxiety. In addition, establishing pathways that provide some context in unraveling the relationships between adversity and anxiety will advance our efforts in identifying individuals who may be at risk. As a result, the current research examined the following inquiries: a) whether there were differences in anxiety schemas based on demographic features (e.g., rurality), b) if significant relationships existed among anxiety schemas, adverse life events, mindfulness, and psychological flexibility, c) did mindfulness mediate the relationship between adverse life events and anxiety schemas, and d) did psychological flexibility mediate the relationship between adverse life events and anxiety schemas.

Significance

The relationships among adverse life events, anxiety schemas, mindfulness, and psychological flexibility are important to examine for various reasons including theory validation, assessment, and therapeutic intervention. Although there are some models that explicate the process by which adverse life events are connected to negative outcomes, few offer insights into the role of mindfulness-based and positive psychology factors. Current research supports this conclusion, as theories such as those in Acceptance and Commitment Therapy (ACT) appear important in understanding the development of anxiety (Hayes et al., 2012). However, more research is needed to explicate the role of mediating factors in the stressful events-psychopathology research. Determining if mindfulness and psychological flexibility

mediate the stressful life events-anxiety schemas relationships will further validate and strengthen the importance of using integrated theories to treat anxiety-related symptoms.

Identifying variables associated with the stress-schema relationship may also have implications for the assessment and identification of those who are at-risk for anxiety. Specific dangers of anxiety difficulties for college students include increased dropout rates, increased suicidal ideation due to adverse life events, and the possible development of more severe clinical pathology (e.g., panic disorder, eating disorders, and/or a major depressive episode). Prevention of negative outcomes, such as these, starts by screening for at-risk students within the general college population. Despite a plethora of research associated with identifying proximal factors influencing anxiety (e.g., attention), there has been a shortage of research in the area of screening for “vulnerability factors that increase risk across anxiety disorders” (Riskind & Williams, 2012, p.175). Because of this, very few anxiety screening measures consider deficits in intrapersonal resources in identifying at-risk students for anxiety.

A better understanding of the stress-anxiety schema relationship, and the roles mindfulness and psychological flexibility play, also has various treatment implications. If these two mediating variables do have a significant effect on the stress-schema relationship, it would create an avenue through which clinicians can deter the activation of debilitating anxiety schemas. This would be an extremely helpful option for individuals who report anxiety symptoms upon presenting to therapy. Using techniques that strengthen mindfulness and psychological flexibility allow the individual to become self-reliant, as they have shown their utility in dealing with other forms of psychological dysfunction. By proxy, this approach may work to increase psychological well-being among the college students seeking treatment.

Definition of Terms

In order to better understand the constructs of this study, definitions for each variable are included below.

Anxiety Schemas. Anxiety schemas are characterized by one or more of the following: the fear that one is in danger or perceives the threat of personal harm, thoughts characterized by control, more specifically lack of control regarding life outcomes, personal feelings of coercion or inferior importance in relation to others, and excessive seeking of approval, recognition, or attention from others (Young et al, 2003). These schemas are built and reinforced throughout one's lifetime, causing enduring cognitive, emotional, and behavioral patterns that may be unhelpful, dysfunctional, and even self-defeating for the individual. In terms of the current study, anxiety schemas acted as the outcome variable.

Adverse Life Events. Stressful events are defined as an experience of events that are appraised as negative and stress provoking. Some environmental responses that create stress are evolutionary, such as being vigilant in an unknown environment, but when these signals create an unnecessarily heightened state, the stress response becomes maladaptive (Somerville, Whalen, & Kelley, 2010). Within the current study, adverse life events served as the predictor variable.

Mindfulness. Mindfulness is personal awareness of and attention to the present moment that is characterized by curiosity, openness, and acceptance. Mindfulness allows individuals to "observe rather than try to control their experience" (McKay et al., 2012, p. 42). Increasing mindfulness enables the individual to better recognize situations and experiences in which anxiety is activated, therefore increasing the likelihood that they will react more adaptively.

Engaging in activities that promote mindfulness aids in present moment problem solving.

Mindfulness acted as a mediating variable in the present research.

Psychological Flexibility. According to Dennis and Vander Wal (2010), psychological flexibility represents an individual's ability to successfully challenge and replace maladaptive thoughts with more balanced adaptive thinking. This increases the individual's ability to think and act more rationally during experiences that are stressful. This is especially helpful when confronted with maladaptive cognitions. Psychological flexibility was the second mediating variable for the present research.

CHAPTER 2: LITERATURE REVIEW

Explicating vulnerability factors to anxiety difficulties is important as the National Comorbidity Study (NCS) lists anxiety as the most common and costly class of mental health disorders in the United States. Prevalence rates indicate that 24.9% of individuals experience significant distress resulting from anxiety difficulties across the lifespan (Kessler et al., 2005). College students are at particularly increased risk for developing anxiety difficulties due to unique stressors including moving away from home, supporting oneself for the first time, and creating new social systems. Developing ways to successfully navigate these new stressors involves complex emotional, academic, and social adjustments (Greenburg, 1990) that may strain coping resources. Because of the widespread influence of anxiety problems within this population, preventative models need to be designed and investigated. Particularly, it is important that researchers obtain a better understanding of the processes by which individuals develop cognitive vulnerabilities to anxiety.

Many theorists believe that cognitions are important for understanding anxiety and its associated symptomology (Reardon & Williams, 2007; Riskind et al., 2000; Young et al., 2003). More specifically, cognitive theory posits that maladaptive belief systems promote and maintain pathology by negatively influencing the way individuals think about, process, and react to adverse life events. To expand on this theory, research indicates that explicit cognitive themes developed in childhood and adolescence, form clusters of thought biases, which result in increased risk for developing symptoms associated with psychiatric disorders (e.g., mood, anxiety, and personality disorders; Reardon & Williams, 2007; Young et al., 2003). Gaining a better understanding of specific cognitive themes associated with anxiety is important for

developing profiles linked to anxiety-related disorders (see cognitive specificity hypothesis; Beck, 1976; Leung & Poon, 2001).

To date, researchers have strongly emphasized the need to develop cognitive profiles for anxiety disorders such as obsessive-compulsive disorder (Lochner et al., 2005), post-traumatic stress disorder (Cockram, Drummond, & Lee, 2010), and social phobia (Hinrichsen, Waller, & Emanuelli, 2004). Based on the current theory and empirical evidence (see for a review, Hawke & Provencher, 2011), cognitive themes of anxiety include exaggerated threat appraisal, insufficient control, subjugation of needs, and social desirability or approval seeking (see Table A1). Together, these themes may create a general cognitive profile that predisposes certain individuals to heightened risk for developing clinical anxiety during their lifetime.

Vulnerability to harm. The cognitive theme most frequently experienced by those with clinical anxiety is the fear of actual or perceived psychological danger that results in sensitivity to harm and exaggerated threat appraisal of one's environment (Hawke & Provencher, 2011). This cognitive style has been identified in anxiety disorders such as generalized anxiety disorders, obsessive-compulsive disorder, post-traumatic stress disorder, social phobia, and panic disorder (Reardon & Williams, 2007). Interestingly, cognitive themes of exaggerated threat are the hallmark feature of the looming cognitive style, which is found to be specifically salient among individuals with clinical anxiety problems (Alloy & Riskind, 2006). Exaggerated appraisal of vulnerability to harm has also been linked directly to general sensitivity to anxiety pathology (Riskind, Black, & Shahar, 2010). Riskind, Black, and Shahar (2010) also speculate that the exaggerated threat component of the looming cognitive profile not only makes individuals more likely to experience psychological symptoms, but is also important in

understanding how individuals high in anxiety generate stressful events that further perpetuate distress.

Insufficient self-control. Cognitive themes associated with helplessness, or lack of control of one's self and environment, are theorized to be implicated in cognitive models of both anxiety and depression (Alloy et al., 1990). Alloy and colleagues (1990) theorize that the constructs of helplessness and hopelessness are distinct and separate psychological risk factors, each having its own pathological trajectory (Reardon & Williams, 2007). This perspective suggests that anxiety results from expectations of control regarding the future (helplessness), whereas depression results when these expectations become a certainty (hopelessness). Thus while self-control may be a cognitive theme implicated in both depression and anxiety, it makes an important contribution to how we understand the overall cognitive profile of anxiety. This cognitive attribution is generated primarily through distorted expectations that adverse life events will occur, and that the individual can do little in the way of preventing them from occurring (Gladstone & Parker, 2001). Similarly, Luten and colleagues (1997) suggest that negative events, when perceived as out of the individual's control, are themselves explicit cognitive symptoms of anxiety. As a result, it is important to consider cognitive themes of control in the explication of the cognitive vulnerability model of anxiety.

Subjugation. Cognitive themes associated with the surrender of personal needs in order to avoid retaliation or abandonment by others are also implicated in clinical anxiety disorders (Calvette et al., 2005). This avoidant regulatory style causes the individual to suppress personal preferences, desires, and emotions in order to avoid expected interpersonal conflict. This becomes an exacerbating feature that perpetuates psychological dysfunction in the form of anxiety. The process of blocking internal experiences eventually results in an uncontrollable

outburst of physiological and psychological symptoms, such as anxiety, passive-aggressive behavior, and even deviance (Young et al., 2003). Subjugation related cognitions have also been implicated in the development and maintenance of obsessive-compulsive disorder (Lochner et al., 2005), and social phobia (Pinto-Gouveia et al., 2006). The varied expression of anxiety symptoms associated with subjugating cognitive themes, is an important element when examining the overall profile of anxiety disorders.

Approval-seeking. Maladaptive cognitions centered around thoughts that one must gain acceptance and approval from others at the expense of developing a true sense of identity have been implicated in anxiety disorders. To date, approval-seeking distortions have been implicated in eating disorders such as bulimia and anorexia nervosa, most likely due to the underlying fear or anxiety that maintains the associated pathology of these disorders (Unoka, Tolgyes, & Czobor, 2007). In addition, Cockram and colleagues (2010) found that approval-seeking cognitions were related to effective treatment outcomes for service veterans diagnosed with post-traumatic stress disorder. These findings point to approval-seeking themes as salient in the experience and treatment of anxiety symptoms and provides support for the theory that how one thinks about themselves and their world can promote, exacerbate, or remediate symptoms of anxiety (Hawke & Provencher, 2011).

Adverse Life Events and Anxiety Schemas

Young and colleagues (2003) theorize that maladaptive schemas develop from adverse events in which core emotional needs, crucial to healthy development, are not achieved or maintained. The core needs believed to be necessary for healthy development include secure attachments to others, autonomy, freedom to express needs and emotions, playing, clear limits, and self-control. More specifically, adverse events are believed to be the predominant contributor

to need suppression and depletion. When needs are stifled, individuals may construct maladaptive cognitive processes that serve to protect them from future negative outcomes. When these cognitive themes are activated, individuals may respond in a predetermined way (e.g., become hypervigilant to surroundings), which is believed to promote personal safety and buffer the impact of adverse life events. The continual activation of distorted cognitive themes in the face of future stressful events however, has been found to greatly influence clinical anxiety disorders (Welburn et al., 2002). More specifically, anxiety related cognitions arise from and are activated by the presence or perceived presence of adverse life circumstance (Harding, Burns, & Jackson, 2012). Research has demonstrated that distal and proximal life events are important in the activation and perpetuation of anxiety schemas (Ingram & Luxton, 2005).

Distal versus proximal stressors. Ingram and Luxton (2005) define stressors as adverse events that hinder an individual's ability to maintain physiological and psychological stability. According to their empirical data, there are two primary forms of stressful events: distal and proximal stressors. The dichotomous relationship between distal and proximal stressors is differentiated by the consideration of time between adverse events (Ensel & Lin, 1996). Distal stressors are adverse events that occurred in the distant past, and are pervasive and chronic in nature. Because of this, distal stressors have the potential to promote, maintain, and exacerbate mental and physical health symptoms, over the course of many years (Grant et al., 2006).

Alternatively, proximal stressors are adverse events an individual has recently experienced that contribute to symptoms that are acute in nature. Proximal stressors are frequently likened to daily hassles (Brougham, Zail, Mendoza, & Miller, 2009), in that they are adverse events that have happened more recently, with psychological symptoms that are intense, but not longstanding. Anxiety outcomes associated with proximal stressors include concentration

difficulties (Pritchard, Wilson, & Yamnitz, 2007), feeling overwhelmed (Sax, 2003), panic attacks (Hawke & Provencher, 2011), and the activation of underlying maladaptive cognitive processes (Beck, 1976; Young et al., 2003).

The developmental model of psychopathology recognizes that both types of stressors negatively impact psychological health outcomes (Cicchetti & Cohen, 1995). This model places equal importance on the distal development of pathology as it does the ongoing adjustment to proximal traumas, secondary stress, and resulting pathology in adulthood (Pynoos, Steinberg, & Piacentini, 1999). The intricate interplay between these stressors over the lifetime may be particularly detrimental to individuals whose cognitive profiles predispose them to chronic anxiety.

The relationship between distal and proximal stressors, in the developmental psychopathology model, compliments Young and colleagues (2003) theory of schema development and the associated pathological outcomes presented across the lifespan. This perspective posits that distal stressors, ones that are experienced in early childhood and adolescence, influence the development of cognitive themes that foster vulnerability to anxiety disorders. When stressors activate anxiety schemas, in an attempt to regulate or avoid expected negative outcomes, they paradoxically work to promote anxiety symptoms. The deeply rooted nature of these cognitive themes predicts increased risk to responding to proximal stressors in a predetermined and maladaptive way (e.g., exaggerated threat appraisal). Although distal and proximal stressors have a collaborative effect on global anxiety features, a review of current literature suggests that these stressors are associated with distinct anxiety outcomes.

Anxiety schemas and distal stressors. Distal stressors are believed to be a main feature in the cultivation of anxiety cognitions. More specifically, adverse events experienced during

childhood and adolescence are incorporated into an individual's definitions of self, other, and the world. This may negatively alter his/her perceptions of stressful situations, causing the individual to react in ways consistent with clinical symptoms (e.g., phobic anxiety and avoidance; Beck, 1976). Over time, this can result in rigid response patterns that have been generalized to many situations, restricting the individual's flexibility to respond to adverse events (Hayes et al., 2012). Some distal stressors experienced in childhood and adolescence that influence adult psychopathology include physical, sexual, and emotional abuse, bullying, and familial conflicts (e.g., between parent and child, or solely between parents; Klibert & Lamis, 2012). The damaging impact of early adverse events can shape the individual's perception of personal security, identity, and worth (Weaton & Gotlib, 1997), and result in the formation of maladaptive anxiety schemas (Young et al., 2003). Anxiety schemas that arise in response to distal stressors are believed to be deeply ingrained, and highly predictive of future negative responses and outcomes (Klibert & Lamis, 2012).

Harding, Burns, and Jackson (2012) recently researched the effect of childhood sexual abuse as a predictor of maladaptive schema development. Results differentiated participants in the study based on severity of childhood sexual abuse. More specifically, this distal trauma influenced higher endorsement of the following maladaptive schemas: Vulnerability to Harm, Mistrust/ Abuse, and Emotional Deprivation. These findings are consistent with previous research indicating schema clusters, and their associated cognitions, are linked to distal adverse life events (Lumely & Harkness, 2007). The results also expand the current literature in that child abuse survivors with post-traumatic stress disorder could be differentiated from a control group by their overall elevation of maladaptive schemas. This is strong evidence for the effects distal stressors have on the development of anxiety cognitions. This may be especially relevant if

an individual with a predisposition to anxiety schemas experiences proximal life events that contribute to acute distress.

Anxiety schemas and proximal stressors. Anxiety schemas are implicated in increased anxious arousal, but more importantly, in increased exposure to future adverse events that are believed to be self-perpetuated (Hankin et al., 2004). Proximal stressors perpetuate established cognitive themes associated with anxiety by increasing the rigidity of responses to threatening events (Pynoos et al., 1999). An example of this process can be observed in post-traumatic stress disorder in which previously neutral stimuli become threat cues in the context of a traumatic experience during childhood. In this case, proximal stressors, such as future reminders of the trauma experience, reactivate anxiety schemas in order to regulate expected negative outcomes. When this cycle of proximal reactivity is allowed to propagate into adulthood, it significantly increases the risk of developing a psychiatric disorder (Tiet et al., 1998). This is theorized to be related to the distorted presuppositions imposed by anxiety schemas that result in the inability to cognitively process acute adverse life events in an adaptive, healthy way (Jind, 2001).

Proximal stressors are contributors to increased risk of developing negative psychological symptoms (Grant et al., 2006; Mash & Barkley, 1996). Proximal events found to effect anxiety symptoms include conflicts in interpersonal relationships (Jackson & Finney, 2002), academic performance (Larson, 2006), and other daily hassles (Brougham et al., 2009; Wagner, Compas, & Howell, 1988). During the transition to college, adolescents are developing into young adults, and experiencing frequent change and growth (Brougham et al., 2009). The experience of frequent proximal stressors increases an individual's vulnerability to anxiety. Anxiety cognitions have been implicated in symptom development during this transition period. Romano (1992) found that anxiety schemas, characterized by vulnerability to harm and self-control cognitions,

interact when college students appraise personal growth. The constant experience of new stressors (e.g., in social relationships, with finances, etc.) is thought to negatively affect one's appraisal of growth, activating maladaptive cognitive themes such as "My life is out of control," as well as the resulting anxiety symptoms. These stressful events are particularly poignant for those individuals who are predisposed to anxiety schemas from childhood and adolescent events (Young et al., 2003).

Mediation Modeling

It is important to note however, that not everyone who experiences adverse life events develops pathological features, namely anxiety cognitions. Of importance, Monroe and Hadjiyannakis (2002) point out that about half of the individuals who experience adverse events *do not develop* symptoms associated with psychopathology. These findings suggest many individuals are able to successfully navigate through these stressors with few lasting negative psychological effects. Given the complexity of the stress-pathology relationship, it is important to identify other contributing factors that differentiate an individual's vulnerability to developing anxiety schemas in response to adverse life events.

Mediation models are useful for determining the contribution of several factors on an observed outcome. More specifically, mediation models allow researchers to highlight variables involved in the relationship between a predictor and outcome variable (Fairchild & MacKinnon, 2009). Another strength of mediation models is that they can be used to test hypotheses that are theory-driven (Grant et al., 2006). The statistical analysis of these models can be especially beneficial for identifying appropriate prevention and intervention pathways consistent with these theories (e.g., Schema Therapy, Acceptance and Commitment Therapy). By exploring and identifying underlying constructs implicated in the stress-psychopathology relationship,

clinicians can develop treatments and preventive measures based on these contributing factors. In this way, interventions are formulated by deconstructing complex relationships into several parts, and then treating identified problem variables to improve health outcomes. Two proposed mediators of the adverse event-anxiety schema relationship are psychological flexibility and mindfulness (see Figure A1 for the statistical model).

Mindfulness. Recent research evidences growing scientific support for the positive effects mindfulness has on psychological well-being. Mindfulness can be defined as the awareness that surfaces by paying deliberate attention to the present moment, while non-judgmentally allowing the experience to unfold (Kabat-Zinn, 2003). Taking this approach in response to daily stressors is linked to positive psychological gains. It allows an individual to approach adverse events without a predisposed perspective, and promotes context specific behaviors that are value-driven and adaptive (Baer, 2003; Brown & Ryan, 2003, Martin, 1997; Hayes et al., 2012). Researchers also see the clinical utility of mindfulness as a self-regulation coping skill that allows for increased cognitive, emotional, and behavioral flexibility and overall well-being (Shapiro, Carlson, Astin, & Freedman, 2006). In short, increased mindfulness is associated with greater psychological health, whereas decreased mindfulness is believed to be a vulnerability factor to stress and poor general health (Shapiro, Brown, & Biegel, 2007; Palmer & Rodger, 2009; Walach et al., 2007).

Mindfulness is seen as the antithesis of anxiety, in that it stands in opposition to ruminative and avoidant behaviors frequently associated with clinical anxiety disorders (Vanderhasselt & Raedt, 2012). More specifically, mindfulness is associated with decreased ruminative worry, suppression of thoughts, and other negative cognitive styles linked to poorer clinical outcomes (Baer et al., 2006; Shapiro et al., 2007; Weinstein, Brown, & Ryan, 2009).

Mindfulness practice has also been observed to help buffer the effect of stressful events experienced by college students (Astin, 1997; Shapiro, Shwartz, & Bonner, 1998). For example, Shapiro and colleagues (1998) found that participation in mindfulness trainings reduced college students' global symptoms of distress, while simultaneously increasing students' empathy and ability to adaptively cope with adverse events. Palmer and Rodger (2009) suggest that individuals who practiced mindfulness are better able to adapt to stressors in the environment, and regulate their emotional experience to meet personal care needs. Adaptive processing of adverse life events is determined by an individual's cognitive appraisal of these events, with maladaptive appraisals such as "I am in danger," leading to increased risk of pathological anxiety (Weinstein et al., 2009).

Mindfulness is theorized to play a role in the stress-anxiety schemas relationship because it increases one's ability to approach and respond to adverse life events without attachment to biased thoughts based on negative childhood experiences (Martin, 1997; Young et al., 2003). Mindfulness is an appropriate mediator for exploring the adverse event-anxiety schema relationship because research suggests that using mindfulness allows the individual to notice triggers for maladaptive thoughts, and the subsequent negative psychological and behavioral outcomes (Williams & Swales, 2004). Moreover, this awareness of biased thoughts and reactions to stressors makes it easier for an individual to consciously choose how to respond to adversity (Kabat-Zinn, 1990). Mindfulness allows the individual to be exposed and desensitized to the dysfunctional thoughts that drive pathological behaviors and perpetuate anxiety symptoms. Therefore, mindfulness can be seen as a protective factor to anxiety features because it increases the individual's ability to examine anxiety schemas, rather than avoid them. This, in time, should

act to decrease the unconscious triggering and activation of maladaptive cognitive themes, decreasing one's vulnerability to anxiety symptom development and maintenance.

Psychological Flexibility. Psychological flexibility is a contributing factor to increased health, and is also linked to psychopathological processes. Individuals who are psychologically flexible are more versatile in responding to stress and adept at focusing personal energy and attention toward meaningful value-driven actions (Hayes, Stroschal, & Wilson, 1999). The negative outcomes of adverse life events are associated with decreased psychological flexibility, which consists of rigid cognitive processes (e.g., rumination and worry; Nolen-Hoeksema, Wisco, & Lyumbomirsky, 2008), patterned behavioral responding, difficulties coping with stressful events, and planning and working toward future goals (Kashdan & Rottenberg, 2010). Hayes and colleagues (2006) theorize that psychological flexibility is a cognitive regulation process centered on present moment-awareness. Individuals who are psychologically flexible have the ability to be aware of the present moment and can therefore adaptively react to, and change behavior in response to adverse events being experienced, in context.

Psychological inflexibility is a primary factor in the stress- anxiety relationship because it increases an individual's tendency to maladaptively respond to adverse life events (Hayes et al., 2006). Recent research also suggests that decreased psychological flexibility plays a major role in anxiety disorders because of its relationship with avoidant coping responses. Maladaptive coping styles frequently implicated in anxiety disorders include: experiential avoidance of bodily sensations in panic disorder (Zvolensky & Eifert, 2000), fear and repression of emotional impulses in individuals diagnosed with generalized anxiety disorders, and the avoidance of intrusive thoughts by performing compulsive rituals as found in obsessive-compulsive disorder (Kashdan & Rottenberg, 2010; Kashdan, 2007). Psychological flexibility also influences the way

an individual processes and copes with adverse events. Specifically, psychological inflexibility is characterized by generalized definitions drawn about oneself and the world, which ultimately instill rigid perceptions of stress and restrict access to a diverse range of coping responses (Dunning, Heath, & Suls, 2004).

Psychological flexibility influences one's ability to discontinue adherence to preexisting cognitive themes (McKay et al., 2012). Increased psychological flexibility allows for the creation of novel associations between situations, as well as for adaptive reactions to environmental and internal stressors (Guilford, 1967; Hayes et al., 2012). Very few studies have researched the relationship between maladaptive schemas and psychological flexibility (see McKay et al., 2012 for review). Psychological inflexibility is believed to be particularly relevant to the stress-anxiety schemas relationship because adverse life events trigger anxiety schemas, activating anxiety-related cognitive and behavioral patterns that are associated with inflexible stress responses and psychological dysfunction (e.g., avoidance; Young et al., 2003). Inversely, psychological flexibility allows the individual to actively experience adverse events, allowing them to be exposed to and process internal experiences, desensitizing their negative effects overtime (Ritter et al., 2012). The desensitizing effect of flexibly experiencing and reacting to daily stressors may decrease the cumulative effect these stressors usually have on negative outcomes. Because of this, it is theorized that psychological inflexibility plays a major role in the continual activation and maintenance of anxiety-related cognitions.

Current Study

Based on the review of literature, the present study aimed to expand work in this field by addressing existing gaps in the research and by extending the understanding of the relationships between adverse life events and anxiety schemas in a sample of college students. Specifically,

this study aimed to explore the mediating effects of mindfulness and psychological flexibility on the stress-anxiety schemas relationship.

Issues of Rurality. The field of rural mental health is currently expanding and bringing to light some of the disparities faced by individuals living in rural and remote geographical locations. Research suggests that rural residents experience unique cultural barriers that perpetuate pathology. These include, but are not limited to: low socioeconomic status, lack of availability and accessibility of health care services, negative help-seeking attitudes (e.g., agrarianism and stigma), and increased likelihood to experience multiple adverse events across the lifespan (Rost, Forney, Fisher, & Smith, 2007; Smith, Humphreys, & Wilson, 2008). In addition, approximately 20% of the total population in the United States is comprised of individuals inhabiting rural or remote locations (Population Reference Bureau, 2010), one-third of which live in regions designated as healthcare provider shortage areas (HPSA; Rabinowitz, Diamond, Markham, & Wortman, 2008). Cultural and geographical risk factors such as these are important in understanding issues of rurality and their effect on overall health (Inder, Berry, & Kelly, 2011).

Despite a growing interest in decreasing health disparities, research has been unable to consistently show that rural barriers promote higher rates of psychopathology, as compared to urban inhabitants (Diala & Mutaner, 2003; Judd, Cooper, Fraser, & Davis, 2006; Peen, Schoevers, Beekman, & Dekker, 2010). Although research exists on the differences in anxiety disorder prevalence based on geographic location, there is a gap in the literature concerning differences in schema development and the mediating effects of intrapersonal coping resources, such as psychological flexibility and mindfulness. The current study therefore sought to explore whether differences in the study variables exist based on geographic region.

Study Hypotheses. The primary focus of this study was to explore the relationships between adverse life events and anxiety schema pathology, via the mediating effects of psychological flexibility and mindfulness. Empirical evidence suggests that adverse life events perpetuate and maintain anxiety pathology, especially if an individual lacks resources to cope adaptively with stressful situations (Young et al., 2003). The current research sought to confirm the extent and direction of the stress- anxiety schema relationship. Based on empirical evidence, it was expected that adverse life events and anxiety schemas would be significantly correlated in a positive direction. In addition, the current study examined the stress-anxiety schemas relationship through mediating variables, namely mindfulness and psychological flexibility. Research findings indicate that increased mindfulness and psychological flexibility are connected with positive treatment gains and symptom reduction (Hayes et al., 2012). In line with this position, it was expected that high levels of mindfulness and psychological flexibility would be negatively correlated with adverse life events and anxiety schemas. Moreover, it was expected that mindfulness and psychological flexibility would mediate the relationship between perceived stressful experiences and anxiety schemas.

CHAPTER 3: RESEARCH METHODOLOGY

Participants

Participants consisted of undergraduate students recruited through a participant pool. To ensure ample power, 183 students were recruited to participate in two administrations of the survey. This amount of participants allowed for differentiation of self-reported differences and patterns between demographic groups within the study's variables. The age range of participants was from 18 to 40 years of age ($M= 21.4$, $SD= 2.2$). There were a total of 150 women who participated (82.0%) and 31 men (16.9%). The self-reported ethnicity of the student sample was comprised of 111 European Americans (60.7%), 54 African Americans (29.5%), 2 Asian/Asian Americans (1.1%), 3 Hispanic Americans (1.6%), 1 American Indian/ Native American (0.5%), 8 Other/Biracial (4.4%), and 1 International Student (0.5%). Of these participants, 97 (53.0%) reported currently living in a non-rural area, with the remaining 83 (45.4%) living in rural areas.

Research Design

The current study utilized a longitudinal design to examine changes in and effects of study variables among a sample of emerging adults over time. Data was collected over five weeks to ensure student participation in both phases of the study. Five weeks is the recommended time frame between survey administrations for longitudinal studies associated with the measurement of stressful events (Haefel et al., 2007). Using a narrow time frame between administrations is advantageous as participants can readily recall accurate details concerning recent impinging psychological stressors. Moreover, short-term longitudinal designs are appropriate for examining the interaction between the experience of stress and specific vulnerability and protective factors that predict fluctuations in psychopathological symptoms (Haefel et al., 2007). Overall, examining the identified research questions through a longitudinal

lens engendered more stable and powerful effects, and increased the validity of the expected relationships (Ingram, Miranda & Segal, 1998).

Procedures

Recruitment and Implementation. Undergraduate students were recruited from undergraduate psychology courses at Georgia Southern University. Students were directed to sign up for the study through SONA. SONA is an organizational system that allows participants to sign up for research studies via the internet. The SONA system is owned and operated by the GSU Psychology Department. Students who were interested in participating in the study signed up via SONA. SONA then provided each voluntary participant with the link to the survey on SurveyMonkey.com, an online survey collector, where interested students began the research participation process. When students arrived at the survey page, they were asked to read and review the informed consent. The informed consent page contained details regarding the study, including the risks, benefits, confidentiality, primary researcher's contact information, and ethical parameters for participating. As the survey was web-based, electronic consent was obtained by having participants select the "yes" option, which represented the voluntarily choice of the student to participate in the study.

After providing their electronic consent, participants were asked to develop a discreet survey code that was used to link the two phases of data collection. Participants then responded to a series of questionnaires, including the Inventory of College Students' Recent Life Experiences, the Young Schema Questionnaire, the Cognitive and Affective Mindfulness Scale, the Cognitive Flexibility Inventory, and a demographic questionnaire. Participants could choose to withdraw from the survey at any time without penalty. Upon completion of the survey, participants were redirected to a debriefing page and provided face-to-face and electronic

resources that offered free and low cost psychotherapeutic services in case they experienced any distress as a result of their participation.

The longitudinal nature of this study required a second round of data collection. Students were recruited to participate in the second half of the study five weeks after completing the first administration of the survey. A recruitment email was sent to those individuals who completed the first administration of the study, from which interested participants could follow a link to complete the second administration of the survey. The survey procedures associated with the second administration were identical to those outlined above for the first administration of data collection.

Data Storage. Initially, data was stored on SurveyMonkey.com. The primary researcher retrieved the data upon its completion from SurveyMonkey.com and transferred it to an SPSS data file for data storage, cleaning, and analysis. Once the transfer from SurveyMonkey.com to a secure SPSS file was complete, the primary researcher deleted all survey responses from SurveyMonkey.com. The SPSS file was then password protected and will be stored on a secure hard drive in the Georgia Southern Psychology Department for seven years.

Measures

Inventory of College Students' Recent Life Experiences. The Inventory of College Students' Recent Life Experiences (ICSRLE; Kohn, Lafreniere & Gurevich, 1990) measures exposure to unique, college-oriented stressors over the past month. This scale has a total of 49 items, which are measured on a 4-point Likert scale ranging from 0- 3 (0 = Not at all part of my life, 1 = Only slightly part of my life, 2 = Distinctly part of my life, 3 = Very much part of my life). The scores for the total ICSRLE range from 0 to 147. Higher scores indicate greater levels of stress associated with events specific to college life. The ICSRLE was specifically developed

to measure levels of stress in the college settings. The ICSRLE demonstrates excellent internal consistency ($\alpha = .92 - .94$) and construct validity with measures of daily hassles (Osman, Barrios, Longnecker & Osman, 1994; Bodenhorn, Miyazaki, Ng & Zalaquett, 2007). In the current study, the internal consistency score of the ICSRLE ranged from .94 to .95, with a test-retest reliability estimate of $r = .80$.

Young's Schema Questionnaire- Long Form 3rd Revision. The Young's Schema Questionnaire- Long Form 3rd Revision (YSQ-L3; Young, 2005) was developed to assess early maladaptive schemas. For the purposes of this study, only the following maladaptive schema subscales will be examined: Vulnerability to harm or illness ($n = 12$), Subjugation ($n = 10$), Insufficient Self-Control ($n = 15$), and Approval Seeking ($n = 14$). Participants are asked to respond to each item using a 6-point Likert scale that ranges from 1- 6 (1 = Completely untrue of me, 2 = Mostly untrue of me, 3 = Slightly more true than untrue, 4 = Moderately true of me, 5 = Mostly true of me, and 6 = Describes me perfectly). The total range of scores varies by subscale: Vulnerability (12 – 72), Subjugation (10 – 60), Insufficient Self-Control (15 – 90), and Approval Seeking (14 – 84). Higher scores reflect greater adherence to maladaptive cognitive themes. Cockram and colleagues (2010) found the abovementioned subscales to have high internal consistency ranging from .90 to .93: Vulnerability ($\alpha = .91$), Subjugation ($\alpha = .90$), Insufficient Self-Control ($\alpha = .93$), and Approval Seeking ($\alpha = .92$). The YSQ-L3 has been found to have good convergent validity as evidenced by moderate correlations with measures of depression, trait anger, and anxiety in college students (Muris, 2006; Welburn et al., 2002). In the current study, the internal consistency score of the YSQ-L3 subscales ranged from .95 to .96, with a test-retest reliability estimate of $r = .81$.

Cognitive and Affective Mindfulness Scale-Revised. The Cognitive and Affective Mindfulness Scale-Revised (CAMS-R; Feldman, Hayes, Kumar, Greeson & Laurenceau, 2007) is comprised of 12 items and was developed as a brief self-report measure of mindfulness. (Feldman et al., 2007; Bishop et al., 2004). The items on the CAMS-R are measured on a 4-point Likert scale ranging from 1- 4 (1 = Rarely/Not at all, 2 = Sometimes, 3 = Often, and 4 = Almost always). The range of total scores is 1 to 24 with higher scores indicative of greater levels of mindfulness. The CAMS-R was developed using an ethnically diverse sample of college students (Feldman et al, 2007). Psychometric examinations of the CAMS-R indicate solid internal consistency ($\alpha = .74 - .77$). Additionally, the CAMS-R demonstrates excellent construct validity with other measures of mindfulness including the Freidburg Mindfulness Scale and the Mindful Attention Awareness Scale, as well as measures of psychological well-being (Feldman et al, 2007). In the current study, the internal consistency score of the CAMS-R ranged from .72 to .74, with a test-retest reliability estimate of $r = .74$.

Cognitive Flexibility Inventory. The Cognitive Flexibility Inventory (CFI; Dennis & Vander Wal, 2010) measures “the type of cognitive flexibility necessary for individuals to successfully challenge and replace maladaptive thoughts with more balanced adaptive thinking” (p. 241). This scale has a total of 20 items, separated into two subscales (alternative and control) measured on a 7-point Likert scale ranging from 1- 7 (1 = Strongly disagree, 2 = Disagree, 3 = Somewhat disagree, 4 = Neutral, 5 = Somewhat agree, 6 = Agree, and 7 = Strongly agree). Total scores range from 10 to 70 for each subscale, with higher scores reflecting greater levels of psychological flexibility. The CFI was developed using a sample of undergraduate college students (Dennis & Vander Wal, 2010). The CFI demonstrates excellent internal consistency ($\alpha = .90-.91$) and construct validity as evidenced by high correlations with measures of adaptive

coping (Dennis & Vander Wal, 2010). In the current study internal consistency scores of the CFI ranged from .72 to .84 for the Cognitive Control Subscale, and from .86 to .89 for the Cognitive Alternative Subscale. Test-retest reliability estimates for the two abovementioned subscales were $r = .64$ and $r = .74$, respectively.

Statistical Analyses

The current study employed numerous statistical analyses to explore the relationships among adverse life events, anxiety schemas, mindfulness, and psychological flexibility. First, a multivariate analysis of variance (MANOVA) was analyzed to determine mean differences in the study variables between individuals from rural versus non-rural areas. In addition, bivariate correlations were examined to determine univariate associations among the study's variables. Finally, a mediation model was constructed and analyzed to determine the effects of mindfulness and psychological flexibility on the relationship between adverse life events and anxiety schemas.

In constructing the mediation model, the current study utilized Preacher and Hayes (2008) multiple imputation guidelines for modeling. This statistical model has several advantages, when compared to more commonly used methods (e.g., causal steps strategy; Baron & Kenny, 1986). Some specific strengths of this procedure included: the ability to manage violations of normalcy, the ability to reduce parameter bias, and the ability to test competing theories within a single model. Bootstrapping (Shrout & Bolger, 2002) and contrasting effects (MacKinnon, 2000) were used to extend the findings of the mediation model. Constructed models were evaluated using a 10,000 bootstrap sample. In addition, biased and biased-corrected confidence intervals were analyzed to determine significant mediation effects and significant differences among mediation effects.

CHAPTER 4: RESULTS

Preliminary Analyses

An exploratory principal component analysis was analyzed with the four schema subscales (subjugation, vulnerability to harm, insufficient self-control, and approval seeking) to obtain component scores reflecting unique, non-overlapping features of cognitive schemas. Using Kaiser's (1960) recommendation for factor selection, only components scores with a minimum eigenvalue of 1.0 were retained. With these criteria, the analysis resulted in one factor that accounted for 72.96% of the total variance among individual schema measures. The identified factor consisted of primary loadings on all four schema measures and was termed *anxiety schemas*.

Rural Differences

A MANOVA was analyzed to determine whether there were significant differences on reported variables between individuals currently living in a rural area and those currently living in non-rural areas. The MANOVA revealed a non-significant overall effect for current rural status (Wilks' Lambda (1, 176) = .52, $p > .05$, $\eta^2 = .02$). Follow-up ANOVA's did not yield any significant findings. Similar procedures were used to examine potential differences in the study variables between those who were raised in rural settings and those who were raised in non-rural areas. Results yielded similar findings. Overall, these results suggest that individuals residing in rural areas have similar reported scores on anxiety schemas, adverse life events, mindfulness, and psychological flexibility as compared to those living in non-rural areas (see table 2).

Bivariate Correlations

Bivariate correlations were examined to determine whether significant relationships existed among the study variables both cross-sectionally and longitudinally. As expected, the relationship between adverse life events and anxiety schemas was significant in the expected

direction, cross-sectionally and longitudinally. In addition, the mediating variables were significantly related to both the predictor (adverse life events) and outcome (anxiety schemas) variables in the expected directions. These relational patterns were also found cross-sectionally and longitudinally. Table 3 depicts all cross-sectional and longitudinal relationships examined within the current study.

Multiple Mediation Model

In order to determine the direct and indirect relationships between adverse life events (Time 1) and anxiety schemas (Time 2), a zero-order correlation model between these variables (labeled as c in mediational analyses; see Preacher & Hayes, 2008) was computed. Results yielded a direct positive relationship between these variables, $r(180) = .61, p < .01$; and a corresponding unstandardized coefficient of .98 ($SE = .10$), $t = 10.17, p < .01$. These results indicate that the frequency of adverse life events is directly related to self-reports of maladaptive anxiety schemas.

To test the hypothesis that the relationship between adverse life events (Time 1) and anxiety schemas (Time 2) are mediated by indices of psychological flexibility (Time 1) and mindfulness (Time 1) a mediation model was constructed using Preacher and Hayes (2008) statistical software (see figure 1). This software is capable of using a single analysis to simultaneously test more than one mediational hypothesis, in a way that effectively controls for Type 1 error. Considering the linear combination of the mediators, the unstandardized relationship between adverse life events and anxiety schemas decreased from .98 to .79 (labeled c'). The overall effect remained significant however, $t = 8.00, p < .01$, indicating a partial mediated effect. These results suggest that the relationship between adverse life events and

anxiety schemas is complex and cannot be explained solely by the mediating variables examined in this study.

Next, a multiple mediation analysis was performed to conclude whether the mediating variables of mindfulness (Time 1) and psychological flexibility indices (Time 1) were individually significant in the overall model. The results included the estimate of the effect, the lower and upper bounds for the 99% biased corrected intervals, as well as the 99% bias corrected and accelerated confidence intervals. It is important to note that if the 99% CIs for the bootstrapped estimate does not contain zero, then the mediating variable is significant at $p < .01$. Findings suggested that the meditational effect for the psychological flexibility-control subscale was the only statistically significant mediator (see table 4). This finding provides empirical support for the theory that certain components of psychological flexibility can attenuate the link between adverse life events and the activation anxiety schemas over time.

CHAPTER 5: DISCUSSION

Review of Purpose

The primary purpose of the current study was to expand research regarding the relationship between adverse life events and core features of anxiety. As a part of this goal, we sought to identify factors that correlate with anxiety schemas. Disentangling the complex relationship between adversity and anxiety also cultivates a clearer understanding of how researchers and clinicians can formulate effective prevention efforts. In light of these goals, the current research examined the following inquiries: a) whether there were differences in anxiety schemas based on demographic features (e.g., rurality), b) if significant relationships existed among anxiety schemas, adverse life events, mindfulness, and psychological flexibility, c) did mindfulness mediate the relationship between adverse life events and anxiety schemas, and d) did indices of psychological flexibility mediate the relationship between adverse life events and anxiety schemas.

Rural Differences in Anxiety Schemas

Non-significant rural differences were revealed for reports of anxiety schemas, adverse life events, mindfulness, and psychological flexibility. Our results suggest that individuals from rural and non-rural areas report similar levels of schematic functioning associated with anxiety disorders. These findings are unique because some theorists have posited that individuals in rural areas suffer from psychiatric illness at an increased rate when compared to their non-rural counterparts (Morley et al., 2007). Our findings contradict this position. It is unknown why our findings are not consistent with prevailing theory regarding increased vulnerability to psychopathological features among rural residents. However, one explanation may include the participant sample from which our analyses were conducted. College students, even those that

were reared in rural settings, may adopt unique cultural values that may not mirror those among emerging adults who live and work in rural settings. It is important that future research examining rural differences in psychopathological outcomes use a more culturally reflective community sample of emerging adults.

In addition, results revealed no practical differences in reports of adverse life events between rural and urban college students. This is again, somewhat surprising, as theorists have found empirical evidence that individuals residing in rural areas face more adversity and interpersonal challenges when compared to individuals living in urban areas (Peterson et al., 2009). One explanation for our findings, as they relate to the current literature, may be related to the way individuals residing in rural areas appraise stressful life events. It is possible that individuals in rural areas may experience life events, that are defined as adverse by general social norms, more frequently compared to individuals residing in urban areas, but it is unknown whether rural individuals appraise such circumstances as stressful based upon their unique lifestyle. Some literature suggests that individuals residing in rural areas display distinct levels of resilience with regard to geographic challenges (Wells, 2010). It is possible that individuals from rural areas possess higher levels of resilience that alter how they appraise stress, which in turn may augment how they endorse items on a measure of adverse life events. If this is the case, future research needs to examine the stress appraisal processes in rural versus non-rural residents. Such examinations may delineate unique pathways by which these two groups of people experience stress, which is important in developing culturally sensitive emotional regulation and conflict management techniques.

Risk Factors to Anxiety Schemas

Results offer unique findings in terms of identifying risk factors for anxiety schemas. Specifically, results revealed that reports of adverse life events at Time 1 predicted unique variance in anxiety schemas at Time 2, suggesting that adverse life events appear to be important risk factor to anxiety schemas. These results are consistent with theory which implicates adverse life events as an activating mechanism for maladaptive thought patterns associated with anxiety disorders (Young et al., 2003). However, our findings contradict certain aspects of the literature. For instance, research has suggested that not everyone who experiences adverse life events develops psychopathological symptoms (Monroe & Hadjiyannakis, 2002). Thus, these same researchers contend that adverse experiences are ill-suited to be risk factors to dysfunctional behavioral outcomes, like anxiety, but instead are better labeled as antecedents to psychopathological outcomes. Because our study revealed a relatively strong longitudinal connection between adverse life events and anxiety cognitions, future research may need to tease apart the relevance of adverse life events (as antecedents versus risk factors) with regard to psychopathological outcomes.

If adverse life events do act as risk factors to core anxiety features, future research may need to delineate the predictive effects of different types of adverse life events (e.g., social versus academic versus intrapersonal) on anxiety symptoms. By comparing and contrasting the overall effects of different types of stressful events, research can clarify the role of stressors in the promotion of anxiety features. For example, anxiety schemas may be activated specifically by adverse life events associated with important social processes (e.g., building a stable social network) versus adverse life events associated with academic issues. Future research needs to

disentangle the possibilities that specific adverse life events may differentially predict variance in important anxiety features over time.

Protective Factors to Anxiety Schemas

Currently, research offers a limited offering of empirically validated protective factors associated with anxiety, especially when compared to risk factors. Theorists contend that the identification of protective factors is important in the development of prevention programs (Floyd et al, 2013; Riskind & Williams, 2012). Based on the longitudinal findings of the current study, two protective factors were identified: mindfulness and psychological flexibility.

These findings are consistent with current research, especially research concerning depression. For instance, mindfulness and psychological flexibility serve as protective factors against the onset and exacerbation of prevalent depressive symptoms (Hayes et al., 2012). In light of our findings, it is important that future research further examine which aspects of mindfulness and psychological flexibility protect individuals against the formation of anxiety features. Both mindfulness and psychological flexibility are comprised of multiple underlying dimensions. For instance, mindfulness is thought to be deconstructed from concentration efforts and non-judgmental awareness of one's ongoing experiences. It is possible that these two specific components may be integral in buffering individuals from the negative effects of anxiety. Mindfulness may decrease anxiety cognitions because it involves present-moment awareness and decision-making, which in turn may counteract the restrictive and rigid behavioral and cognitive patterns elicited by anxiety. In addition, practicing mindfulness through present-moment awareness and decision-making, rather than avoidance, may also act to desensitize adverse life events that may have the potential to elicit an anxiety response. Future research may need to further examine the dynamics of present moment awareness and decision-making to

obtain a more robust conceptualization of how mindfulness protects individuals against anxiety features.

Different components of psychological flexibility may also buffer individuals against the development of anxiety problems. More specifically, the ability to actively and adaptively shape the direction of one's life based on personal values may serve as a reservoir of intrapersonal strength to ward off debilitating features of anxiety. For instance, such abilities may increase feelings of coping self-efficacy, a resource known to contribute to lower levels of anxiety (Hayes et al., 2012). In addition, psychological flexibility often consists of a number of growth-oriented processes. For instance, individuals with high psychological flexibility often appraise stress as an opportunity for growth or to enhance one's skills. Such a perspective may minimize long-lasting anxiety effects associated with stress, conflict, and interpersonal distress. As a result, future research needs to experimentally determine whether or not underlying components of psychological flexibility, adaptability, and growth-oriented processes, contribute to psychological strengths known to ward off experiences of anxiety.

Mediation Models

In regard to the mediation models, psychological flexibility- control explained some of the variance between adverse life events and anxiety schemas. This indicates a partially-mediated effect. Most notably, the ability to perceive challenging events as controllable seems important in conceptualizing the link between adverse life events and stable features of anxiety pathology. This finding is consistent with other studies investigating complex and indirect pathways between adverse life events and maladaptive cognitions associated with anxiety (e.g., Harding et al., 2012; Ingram & Luxton, 2005). For instance, Luten and colleagues (1997) found

that when adverse life events are perceived as out of the individual's control, this individual may be at risk for developing anxiety related symptoms.

Our results also extend the previous literature, suggesting at least in part, that the way individuals marshal resources (i.e., positive appraisal) is important in explaining how adverse life events are connected to anxiety. Currently, few studies offer evidence that implicate strength-based approaches as important in conceptualizing the link between the experience of adverse life events and core anxiety features. It is important that research continue to elucidate the path between life events and anxiety from a strength-based perspective. For instance, using quasi-experimental designs to determine how positive appraisal components of psychological flexibility-control might impede the cultivation of negativity, a construct commonly associated with the experience of anxiety, after a stressful event may be particularly advantageous. Using extremely powerful experimental designs, like the one offered above, would further highlight the effect of psychological flexibility-control in explaining the conditions by which adverse life events may lead to the development of anxiety problems. In turn, such findings may be important in developing and/or enhancing anxiety prevention programs.

Consequently, it is important that future research identify whether psychological flexibility-control is a specific mediator in the stress-anxiety feature relationship. One of the major drawbacks in the current literature regarding psychopathological outcomes is generating evidence that differentiates between specific abnormal behaviors. For instance, research has consistently indicates that reports of anxiety and depressive features co-vary at a very high degree (Alloy and Riskind, 2006; Alloy et al., 1990; Reardon & Williams, 2007), which has confounded a number of practical application processes including case conceptualization, diagnosis, and treatment selection. According to Klibert and colleagues (2014), determining

unique pathways by which anxiety versus depressive symptoms evolve may help clinicians differentially diagnose a set of overlapping and complex presenting symptoms. Therefore, it is important to determine if adverse life events are differentially connected to salient mental health outcomes through unique mediators and moderators. As a result, future researchers may want to determine if psychological flexibility-control is a unique mechanism that differentially explains how adverse life events lead to anxiety versus depressive features. Identifying if psychological flexibility-control is a unique intervening variable in the adverse life event-anxiety feature relationship may be important in helping clinicians differentially determine if a client's symptom set is associated with the presence of anxiety versus depressive conditions.

Considering prevailing theory and empirical evidence, it was somewhat surprising that mindfulness and psychological flexibility- alternate did not significantly account for variance between adverse life events and anxiety schemas. On the surface, these results suggest that these factors may not be as important in explaining how life stressors activate anxiety features. However, it is important to consider the covariance among the variables of mindfulness, psychological flexibility-alternate, and psychological flexibility-control. The shared covariance among these constructs may have minimized the ability of mindfulness and psychological flexibility-alternate to explain unique variance in the stress-anxiety schema relationship. As a result, future research may want to independently examine the role of each of these variables in explaining the link between adverse life events and anxiety schemas.

Practical Implications

The current study has several notable practical implications that may work to further professional service orientated toward the assessment and intervention of anxiety features.

Assessment. There is a need to direct research toward the identification of factors that prevent anxiety features. The current study identified two sets of unique protective factors that may be incorporated into primary and secondary prevention strategies to anxiety. More specifically, the current study suggests that mindfulness and psychological flexibility appear to be important in not only protecting against anxiety features, but also in identifying those individuals who are at risk for anxiety pathology (e.g., anxiety schemas). Given these findings, newly developed screening tools and assessment procedures should consider including items that measure each of these constructs.

Intervention. Many individuals who present to therapy with chronic, ruminative thought patterns, commonly associated with anxiety disorders, have difficulty managing adverse life events. The results of the current study highlight the inability to perceive challenging events as under one's control, as a mechanism of focus in treatment for such individuals. Acceptance and Commitment Therapy (ACT; Hayes et al., 2012) is an evidenced-based treatment approach that highlights psychological flexibility as a core component in the treatment of a wide range of psychosocial and emotional difficulties. Clinicians may want to consider ACT approaches as a means of promoting perceptions of control in the face of adverse life events for individuals suffering from debilitating anxiety features. Defusion techniques may be particularly important in promoting more adaptive appraisal and perspective-taking skills. The *leaves on a stream* exercise is a commonly used ACT defusion technique that encourages the individual to envision automatic thoughts as leaves floating down a stream (Hayes et al., 2012, pg. 245). Once the client develops defusion skills, they can begin to implement the process of stepping back from thoughts when it is meaningful to do so, which is particularly helpful in the face of adversity. This can be an extremely empowering experience for the client. By enhancing how individuals

appraise conflict and challenges, clinicians may be able to reduce the impact of anxiety-related cognitions and provide a precipice for learning how to adaptively cope with adverse life events in the future.

Limitations

The present study had several limitations worth noting. First, the generalizability of our findings is limited as the participants were derived exclusively from undergraduate psychology classes at a rural, moderately sized university in the southeastern United States. For instance, it would be inappropriate to generalize the results of this study to ethnically diverse (e.g., Mexican American) and non-traditional students. It is important that future research replicate the findings of the study using a more culturally diverse sample of college students. Another limitation of the present study was the research design, which relied on the use of self-report measures. The design of the study does not allow for causal relationships among the study variables. As a result, future studies employing quasi-experimental designs are needed to determine if and how adverse life events and intrapersonal resources (e.g., mindfulness) contribute to the development and exacerbation of anxiety schemas. The short-term interval design of longitudinal design may also present some distinct difficulties. For instance, it is unknown if the stability of the relationships examined are stable across longer periods of time. As a result, data collection intervals may be extended to increase inferences associated with the stability and power of the statistical outcomes observed. Lastly, the 2-wave longitudinal design may be substituted for the preferred 3-wave method in which variables are collected at different waves (e.g., adverse life events at time 1, mindfulness and psychological flexibility at time 2, and anxiety schemas at time 3). This would increase the flexibility and power of the statistical analytical options (e.g., cross-lagged panel models; Selig & Preacher, 2009), which may result in more accurate and meaningful findings.

General Conclusions

In summary, the current study is the first to examine the relationships between adverse life events, anxiety schemas, mindfulness, and psychological flexibility. The results expand the current body of literature in a few important ways. First, the current study used a longitudinal design to identify risk and protective factors to chronic anxiety features. Of importance, the study highlighted mindfulness and psychological flexibility as important factors that may protect individuals against the experience of debilitating anxiety cognitions. This is important as few studies offer evidence for protective components to anxiety. Second, findings provide empirical support that certain components of psychological flexibility can attenuate the link between adverse life events and anxiety schemas over time. Specifically, they highlight the effects of controllability appraisals in explaining the connection between adverse life events and anxiety schemas. In total these results offer some beneficial practical implications in the prevention and treatment of anxiety features. Importantly, using evidenced-based techniques, such as ACT, designed to alter an individual's relationships with their internal experiences may help to manage anxiety cognitions and promote healthier coping habits.

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Table 1

Maladaptive Schema Dimensions and Scales

Schema Scales	Definition
Vulnerability to Harm Schema	Exaggerated fear that a catastrophe is imminent and that one will be unable to prevent it.
Insufficient Self-Control Schema	Constant difficulty or refusal to exercise self-control in order to achieve personal goals or the inability to restrain expression of one's emotion and/or impulses.
Subjugation Schema	Surrendering of control to others to avoid abandonment, retaliation or anger.
Approval-Seeking Schema	Emphasis on gaining approval or attention from others, usually at the expense of developing a secure sense of self.

Note. Adapted from *Schema Therapy: A Practitioners Guide*, J. Young, J. Klosko and M. Weishaar, 2003, pp. 14-17. The Guilford Press, NY.

Table 2

Means, Standard Deviations, and Minimum and Maximum Scores for Negative Life Events, Anxiety Schemas, Mindfulness, and Psychological Flexibility based on Rurality

Variables	Mean (SD)	Min - Max Scores
Rural (N= 83)		
Negative Life Events	99.67 (21.55)	58.00 – 144.00
Anxiety Schemas	119.33 (36.68)	50.00 – 225.00
Mindfulness	31.54 (4.59)	21.00 – 43.00
Psychological Flexibility- Alternate	71.12 (9.30)	47.00 – 90.00
Psychological Flexibility- Control	34.69 (7.78)	16.00 – 49.00
Non-rural (N= 97)		
Negative Life Events	99.16 (22.32)	61.00 – 162.00
Anxiety Schemas	118.25 (30.70)	15.00 – 49.00
Mindfulness	31.32 (4.45)	18.00 – 40.00
Psychological Flexibility- Alternate	72.35 (9.22)	39.00 – 90.00
Psychological Flexibility- Control	35.97 (7.50)	15.00 – 49.00

Table 3

Inter-correlations among Measures of Negative Life Events, Anxiety Schemas, Mindfulness, and Psychological Flexibility

Variables	1	2	3	4	5	6	7	8	9
1. NLE1	--	--	--	--	--	--	--	--	--
2. ANX1	.58**	--	--	--	--	--	--	--	--
3. MIN1	-.28**	-.48**	--	--	--	--	--	--	--
4. PFA1	-.18	-.27**	.50**	--	--	--	--	--	--
5. PFC1	-.34**	-.54**	.53**	.65**	--	--	--	--	--
6. NLE2	.80**	.52**	-.20**	-.17**	-.35**	--	--	--	--
7. ANX2	.61**	.81**	-.36**	-.25**	-.48**	.67**	--	--	--
8. MIN2	-.27**	-.45**	.74**	.45**	.52**	-.24**	-.37**	--	--
9. PFA2	-.17*	-.33**	.41**	.64**	.51**	-.11	-.30**	.45**	--
10. PFC2	-.38**	-.58**	.44**	.49**	.74**	-.44**	-.57**	.50**	.61**

Note: *Correlation is significant at the .05 level. ** Correlation is significant at the .01 level.
 NLE1= Negative Life Events (Time 1), ANX1= Anxiety Schemas (Time 1), MIN1= Mindfulness (Time 1), PFA1= Psychological Flexibility- Alternate (Time 1), PFC1= Psychological Flexibility- Control (Time 1), NLE12= Negative Life Events (Time 2), ANX2= Anxiety Schemas (Time 2), MIN2= Mindfulness (Time 2), PFA2= Psychological Flexibility- Alternate (Time 2), PFC2= Psychological Flexibility- Control (Time 2).

Table 4

Multiple Mediation Results for Mindfulness and Psychological Flexibility on the Stress-Anxiety Schemas Relationship

Effect	BC 99% CI		BCA 99% CI		
	Lower	Upper	Lower	Upper	
Indirect Effects					
Mindfulness	0.040	-0.041	0.167	-0.043	0.164
Psyc Flex Alternate	-0.006	-0.096	0.035	-0.090	0.037
Psyc Flex Control	0.156	0.016	0.399	0.010	0.382
TOTAL	0.190	0.044	0.395	0.039	0.385
Contrasts					
MIN minus PFA	0.046	-0.057	0.213	-0.062	0.205
MIN minus PFC	-0.115	-0.376	0.073	-0.354	0.088
PFA minus PFC	-0.161	-0.451	-0.002	-0.436	0.006

Note: BC refers to Bias Corrected and BCA refers to Bias Corrected and Accelerated. Based on 10,000 bootstrap samples. MIN= Mindfulness, PFA= Psychological Flexibility- Alternate, PFC= Psychological Flexibility- Control.

Figure 1. Illustrates the direct and indirect relationship between adverse events and anxiety schemas. Mindfulness and Psychological Flexibility are the mediating variables. Standardized beta coefficients are depicted on each path of the model.

